

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte EDWAR S. SHAMSHOUM and SEHYUN KIM

Appeal No. 1999-1832
Application 08/474,233

ON BRIEF

Before OWENS, LIEBERMAN, and DELMENDO, Administrative Patent Judges.

OWENS, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the examiner's refusal to allow claims 14 and 16-30 as amended after final rejection. These are all of the claims remaining in the application.

THE INVENTION

The appellants claim a process for polymerizing propylene using a specified catalyst. Claim 14 is illustrative and is appended to this decision.

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THE REFERENCES

Mao et al. (Mao)	4,861,847	Aug. 29, 1989
Ishimaru et al. (Ishimaru)	4,990,479	Feb. 05, 1991

THE REJECTIONS

Claims 14 and 16-30 stand rejected as follows: under 35 U.S.C. § 112, first paragraph, written description requirement, and under 35 U.S.C. § 103 as being unpatentable over Mao in view of Ishimaru.

OPINION

We affirm the aforementioned rejections.

The appellants argue that the claims stand or fall in two groups: 1) claims 14, 16, 19 and 21-30, and 2) claims 17, 18 and 20 (brief, page 4). We therefore limit our discussion to one claim in each group, i.e., claims 14 and 20. See *In re Ochiai*, 71 F.3d 1565, 1566 n.2, 37 USPQ2d 1127, 1129 n.2 (Fed. Cir. 1995); 37 CFR § 1.192(c) (7) (1997).

Rejection under 35 U.S.C. § 112, first paragraph

The examiner argues that the appellants' specification lacks adequate written descriptive support for the lower limit of the 1 to 400 Si/Ti range in claim 14 (answer, page 3). The

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appellants assert that this rejection is unsupported by case law and is inconsistent with the requirements of 35 U.S.C. § 112 (brief, page 9), but do not provide a substantive argument in response to the rejection. Accordingly, we summarily affirm the rejection under 35 U.S.C. § 112, first paragraph.

Rejection under 35 U.S.C. § 103

The appellants indicate that their invention is the use of the electron donor recited in their claims as the electron donor in Mao's process (specification, page 5, lines 8-11; page 15, lines 3-4). Mao's electron donor is an organosilicon compound having a general formula (col. 5, lines 39-44) which encompasses that in the appellants' claims, but Mao does not disclose that the group which corresponds to the appellants' R_4 can have a secondary or tertiary carbon atom attached to the silicon atom as recited in the appellants' claim 14, and does not disclose that the electron donor can be dicyclopentyldimethoxysilane as recited in the appellants' claim 20.

Ishimaru discloses "[a]n olefin polymerization catalyst formed from (A) a solid titanium catalyst component containing

magnesium, titanium and halogen as essential ingredients, (B) an organoaluminum compound, and (C) an organosilicon compound containing a cyclopentyl group, a cyclopentenyl group, a cyclopentadienyl group or a derivative derived from any of these groups" (abstract; col. 11, lines 23-35). The especially preferred organosilicon compounds are those wherein, in Ishimaru's general formula $\text{SiR}^{21}\text{R}_m^{22}(\text{OR}^{23})_{3-m}$, m is 2, R^{21} is a cyclopentyl group, R^{22} is an alkyl group or a cyclopentyl group, and R^{23} is an alkyl group, particularly a methyl or ethyl group (col. 11, lines 33-35; col. 12, lines 38-42). The exemplified organosilicon compounds include dicyclopentyldimethoxysilane (col. 12, lines 52-53).

Because Ishimaru teaches that polyolefins made using the disclosed catalyst have high stereoregularity and are excellent in particle size distribution, particle diameter and bulk density (abstract; col. 15, lines 56-59), which are properties desired by Mao (col. 13, lines 3-6 and 11-17), Ishimaru would have fairly suggested, to one of ordinary skill in the art, use of his organosilicon compound as the organosilicon compound in Mao's

process. Hence, the processes recited in the appellants' claims 14 and 20 would have been *prima facie* obvious to one of ordinary skill in the art over these references.

The appellants assert that "[n]either Mao nor Ishimaru, individually or in combination, teach, disclose or suggest the combination of a particular class of organosilicon compounds with a specific catalyst component" (brief, page 5). The appellants, however, provide no reasoning as to why the claimed invention would not have been *prima facie* obvious to one of ordinary skill in the art over the applied references.

The appellants argue that the data in their specification show that their process produces unexpectedly superior control of xylene solubles and crystallinity (brief, pages 6-8). For the following reasons, the evidence relied upon by the appellants is not effective for overcoming the *prima facie* case of obviousness.

First, the appellants' showing of unexpected results does not provide a comparison of the claimed invention with the closest prior art. See *In re Baxter Travenol Labs.*, 952 F.2d 388, 392, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991); *In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984). The

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appellants argue that Mao is the closest prior art (brief, page 6). Even if the appellants are correct in this regard, the record does not indicate that the appellants have compared the claimed process to that of Mao. The appellants state that they have compared the claimed process to a process in which another commercially available Ziegler-Natta catalyst component is substituted for that used in the appellants' examples (specification, page 18, lines 17-19). The appellants state that the catalyst in the comparative examples was believed to be prepared with the materials and processes disclosed in three patents and is sold by Toho Titanium, Inc. under the trade name "THC-32A" (specification, page 15, lines 5-8), but the appellants do not disclose the composition of the catalyst. Regardless, the appellants' claimed process differs from that of Mao only in the use of an electron donor which falls within the scope of Mao's generic organosilicon compound formula but is not specifically disclosed in that reference. Hence, the proper comparison would be between the claimed process and Mao's examples wherein Mao's organosilicon compound is used. The appellants have not provided such a comparison.

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Second, it is not enough for the appellants to show that the results for the appellants' invention and the comparative examples differ. The difference must be shown to be an unexpected difference. See *In re Freeman*, 474 F.2d 1318, 1324, 177 USPQ 139, 143 (CCPA 1973); *In re Klosak*, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA 1972). The appellants' specification states (page 23) that the claimed process produced lower xylene solubles and higher crystallinity than the comparative examples, but does not indicate that one of ordinary skill in the art would have considered the differences in these properties between the claimed process and the comparative examples to be unexpected. The appellants have provided mere attorney argument to that effect, and such argument of counsel cannot take the place of evidence. See *In re De Blauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984); *In re Payne*, 606 F.2d 303, 315, 203 USPQ 245, 256 (CCPA 1979); *In re Greenfield*, 571 F.2d 1185, 1189, 197 USPQ 227, 230 (CCPA 1978); *In re Pearson*, 494 F.2d 1399, 1405, 181 USPQ 641, 646 (CCPA 1974). Regardless of the fact that the appellants vary the Ziegler-Natta catalyst component rather than the electron donor in their comparisons, it reasonably appears

that the teaching by Ishimaru that the preferred catalysts, which include the appellants' organosilicon compound as an electron donor, produce polyolefins with high stereoregularity and low hydrocarbon solubles (abstract; col. 15, lines 50-53), indicates that one of ordinary skill in the art would have expected improved results to be obtained using Ishimaru's organosilicon compound as an electron donor in Mao's process.

Third, the evidence in the appellants' specification is not commensurate in scope with the claims. See *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 778 (Fed. Cir. 1983); *In re Clemens*, 622 F.2d 1029, 1035, 206 USPQ 289, 296 (CCPA 1980). The appellants' claim 14 encompasses broad ranges of 1) amounts of titanium, magnesium, and halide, 2) compositions and amounts of polycarboxylic acid ester and organic phosphorous compound, 3) composition and amount of the electron donor, and 4) Si/Ti ratio. In the appellants' examples the electron donors are used in varying amounts, but only four electron donors are used and the other variables are held constant. One of the electron donors is dicyclopentyldimethoxysilane as recited in the

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appellants' claim 20, and it is used in various amounts, but the other of the variables listed above are held constant.

Consequently, the experiments do not cover the scope of the claims. We find in the evidence of record no reasonable basis for concluding that the great number of materials and their relative amounts encompassed by the appellants' claims would behave as a class in the same manner as the particular materials and relative amounts tested. See *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972); *In re Susi*, 440 F.2d 442, 445-46, 169 USPQ 423, 426 (CCPA 1971).

For the above reasons we conclude, based upon the preponderance of the evidence, that the processes recited in the appellants' claims 14 and 20 would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103.

DECISION

The rejections of claims 14 and 16-30 under 35 U.S.C. § 112, first paragraph, written description requirement, and under 35 U.S.C. § 103 over Mao in view of Ishimaru, are affirmed.

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No time period for taking any subsequent action in
connection with this appeal may be extended under 37 CFR
§ 1.136(a).

AFFIRMED

TERRY J. OWENS)	
Administrative Patent Judge)	
)	
)	
PAUL LIEBERMAN)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
)	
)	
ROMULO H. DELMENDO)	
Administrative Patent Judge)	

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APPENDIX
Claim 14

14. A process for the polymerization of propylene comprising:

(a) selecting a conventional Ziegler-Natta catalyst component consisting essentially of about 1.5-6.0% by weight or [sic, of] titanium, about 10-20% by weight of magnesium, about 40-70% by weight of a halide selected from the group consisting of chlorine, bromine, and iodine; about 5-25% by weight of a polycarboxylic ester selected from the group consisting of the esters of aliphatic, aromatic and alicyclic polycarboxylic acids; and about 0.1-2.5% by weight of an organic phosphorus compound selected from the group consisting of hydrocarbon esters of phosphoric acid and phosphorus acid wherein each hydrocarbon group has 1 to 6 carbon atoms, said catalyst component being prepared by a process having the following steps:

a) dissolving a magnesium halide compound selected from the group consisting of magnesium halide complexes of magnesium halide with water or alcohol and derivatives of magnesium halide wherein a halogen atom is replaced by a hydrocarboxyl group or a halohydrocarboxyl group in a solvent mixture consisting of an organic epoxy compound, selected from the group consisting of oxides of aliphatic olefins and diolefins, oxides of halogenated aliphatic olefins and diolefins and glycidyl ethers, all having 2 to 8 carbon atoms, and an organic phosphorus compound selected from the group consisting of alkyl phosphates, aryl phosphates, aralkyl phosphates,

alkyl phosphites, aryl phosphites and aralkyl phosphites where alkyl has one to four carbon atoms and aryl has six to ten carbon atoms to form a homogeneous solution;

b) mixing the homogeneous solution with a liquid titanium compound having the formula $TiX_n(OR)_{4-n}$ wherein X is halogen, R is an alkyl group being identical or different and n is an integer of 0 to 4;

c) adding at least one auxiliary precipitant selected from the group consisting of carboxylic acid anhydrides, carboxylic acids, ethers and ketones to form a precipitate;

d) adding a polycarboxylic acid ester when a precipitate appears;

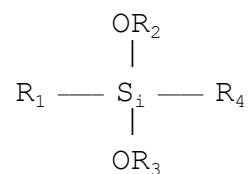
e) separating the precipitate from the mixture and treating the separated precipitate with titanium compound, $TiX_n(OR)_{4-n}$ wherein X is halogen, R is a hydrocarbon group and may be identical or different, and n is an integer of from 0 to 4, or a mixture thereof, in an inert diluent; and

f) washing the treated precipitate with an organic inert diluent

(b) contacting, the catalyst with an organoaluminum compound;

(c) contacting said catalyst with an electron donor either simultaneously with or after step (b), said electron donor described by the formula:

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wherein R_1 is an alkyl or cycloalkyl group containing a primary, secondary or tertiary carbon atom; R_2 and R_3 are each independently an alkyl or aryl group; and R_4 is an alkyl or cycloalkyl group with a secondary or tertiary carbon atom attached to the silicon atom; R_1 and R_4 are the same or different wherein the Si/Ti molar ratio ranges from 1 to 400

d) introducing said catalyst into a polymerization reaction zone containing said monomer.